

Find the area of the triangle

$$A = \frac{1}{2} ab \sin C$$

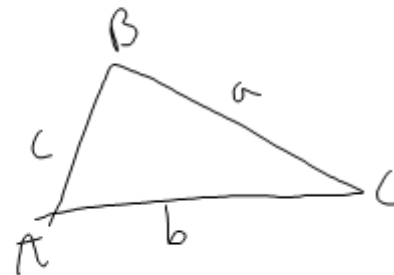
$$= \frac{1}{2} ac \sin B$$

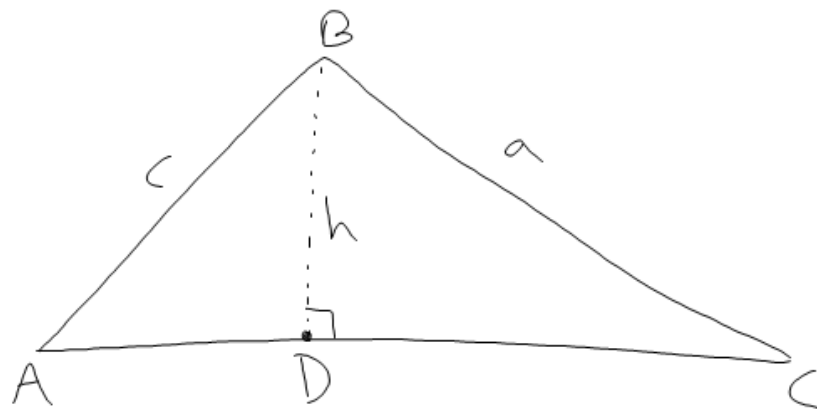
$$= \frac{1}{2} bc \sin A$$

$$\sin 48 = \frac{x}{5}$$

$$5 \sin 48 = x$$

$$\frac{13x}{2} = \text{Area} = 24.1522$$





$$\sin A = \frac{h}{c}$$

$$h = c \sin A$$

$$\sin C = \frac{h}{a}$$

$$h = a \sin C$$

$$c \sin A = a \sin C$$

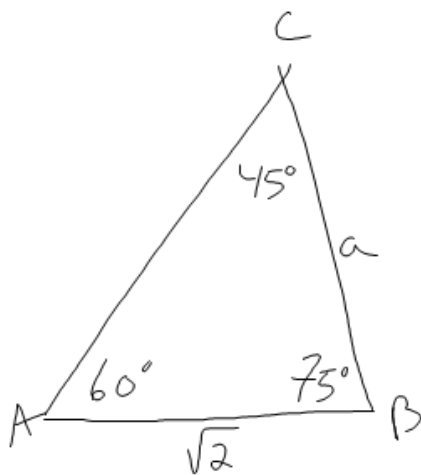
$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

Law  
Sines

$$\frac{\sin A}{a} = \frac{\sin C}{c} = \frac{\sin B}{b}$$

Law Sines

$$\frac{a}{\sin A} = \frac{c}{\sin C} = \frac{b}{\sin B}$$

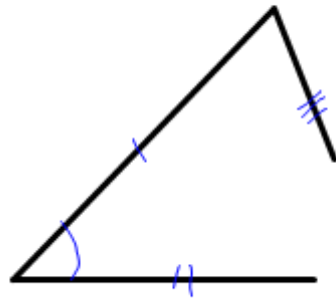


$$\frac{\sin 45}{\sqrt{2}} = \frac{\sin 60}{a}$$

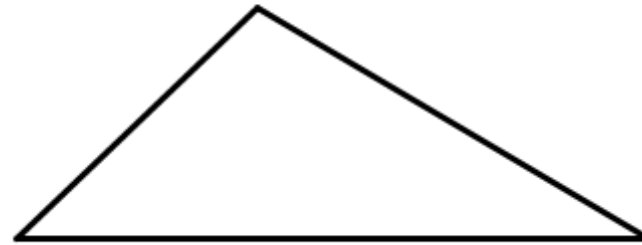
$$a \sin 45 = \sqrt{2} \sin 60$$

$$a = \frac{\sqrt{2} \sin 60}{\sin 45}$$

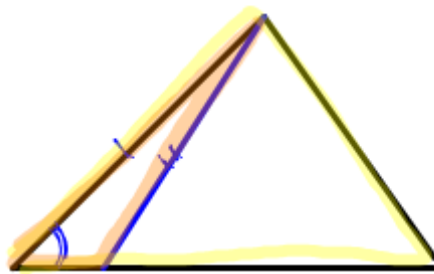
$$a = \frac{\sqrt{2} \cdot \frac{\sqrt{3}}{2}}{\frac{\sqrt{2}}{2}} = \frac{\sqrt{2} \cdot \sqrt{3}}{\cancel{2}} \cdot \frac{\cancel{2}}{\sqrt{2}} = \sqrt{3}$$



No Triangle



1 triangle



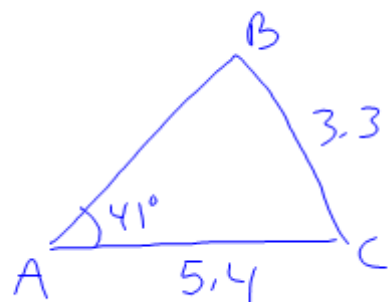
ASS

2 triangle



Having 2 side lengths and 1 angle can give you 2 triangles

$$A = 41^\circ \quad a = 3.3 \quad b = 5.4$$



$$\frac{\sin 41}{3.3} = \frac{\sin B}{5.4}$$

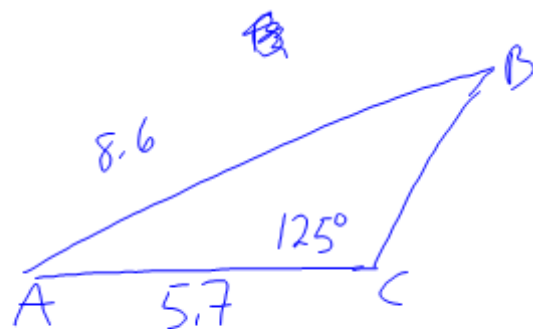
$$\frac{5.4 \cdot \sin 41}{3.3} = \sin B$$

$$\sin^{-1} 1.07 = \sin B$$

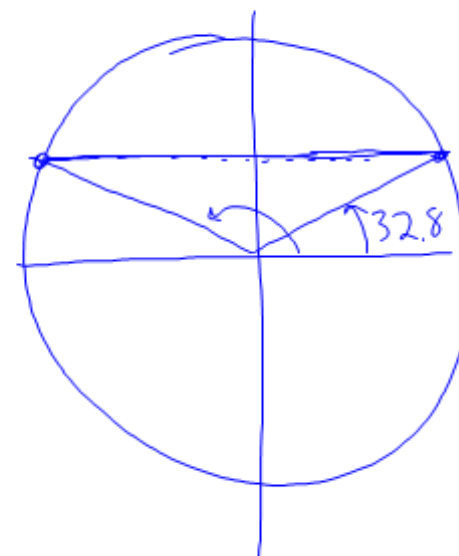
$$\text{Error} = B$$

No triangle

$$C = 125^\circ \quad b = 5.7 \quad c = 8.6$$



$$\frac{\sin 125^\circ}{8.6} = \frac{\sin B}{5.7}$$



$$\frac{5.7 \cdot \sin 125^\circ}{8.6} = \sin B$$

$$0.543 = \sin B$$

$$B = 32.88^\circ, \quad 180 - 32.88 = 147.22$$

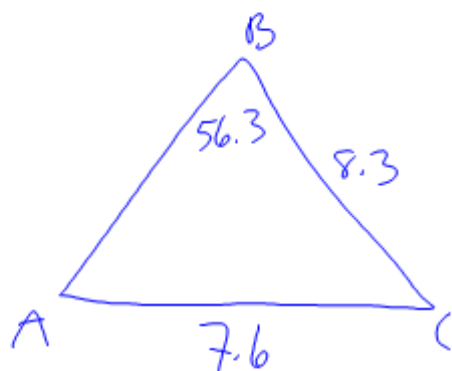
Angles

125  
32.88  
22.12

~~Angles~~

~~125  
147.22  
- 92.22~~

1 Triangle



$$\frac{\sin 56.3}{7.6} = \frac{\sin A}{8.3}$$

$$\sin A = \frac{8.3 \sin 56.3}{7.6}$$

Angles

56.3

65.3

58.4

Angles

56.3

114.7

9

$$\sin A = 0.908$$

$$A = 65.31, 180 - 65.3$$

114.7

2 triangles

Hw

Sect. 7.1 # 3, 5-8, 22, 23, 31, 43, 45

Sect. 7.2 # 5-8, 13, 14, 15, 18